

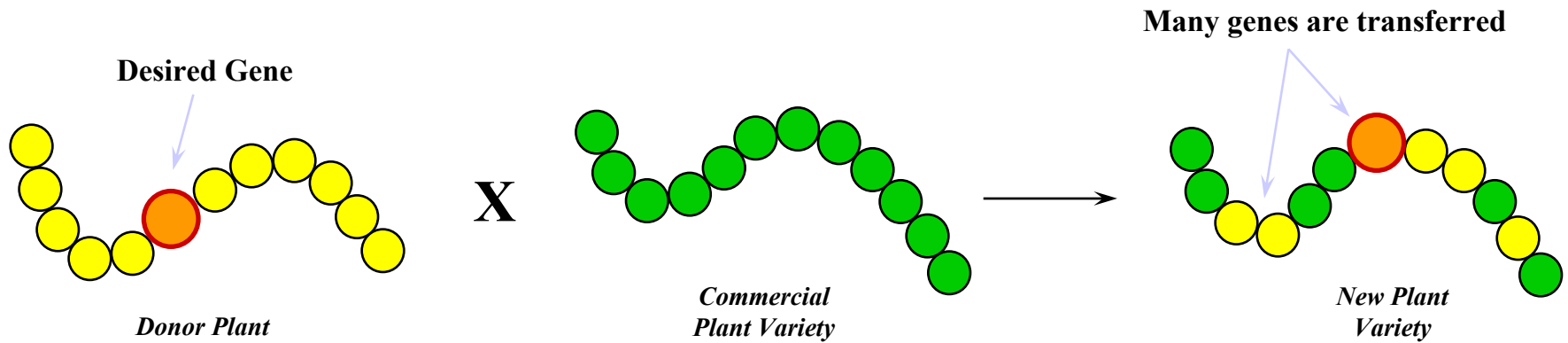
Types of Plant Biotechnology

- Traditional
 - Tissue culture/micropropagation techniques
- Modern Biotechnology
 - Transgenic plants
 - ★ disease and pest resistant crops (virus resistant, Bt. crops)
 - ★ Herbicide-tolerant crops (round up ready crops)
 - ★ nutritionally enhanced vegetables, fruits and grains (golden rice)
 - ★ medically modified foods (vaccines in crops)
 - Use of DNA for diagnostics
 - Use of genetic markers in marker assisted and gene assisted selection and breeding

Biotechnology is a Natural Extension of Traditional Plant Breeding

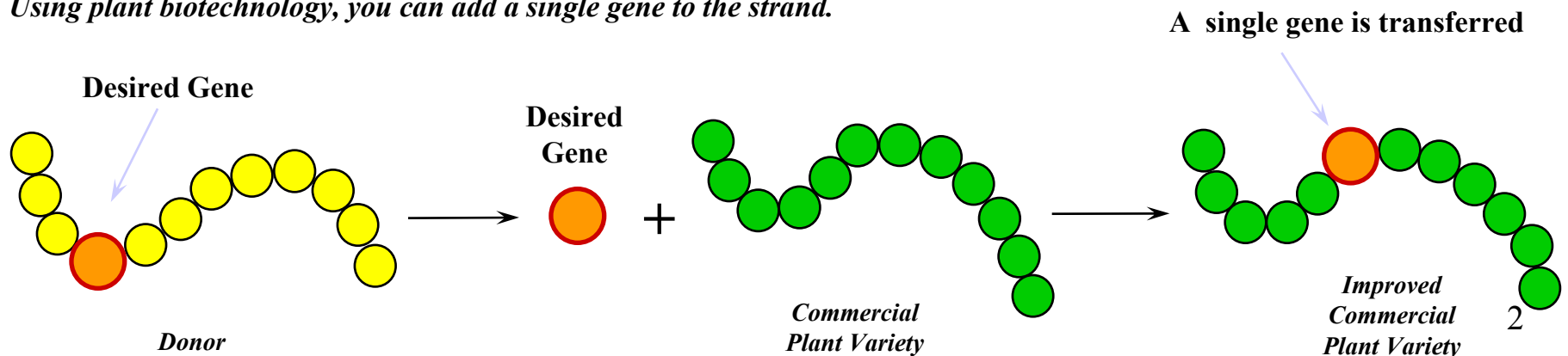
TRADITIONAL PLANT BREEDING

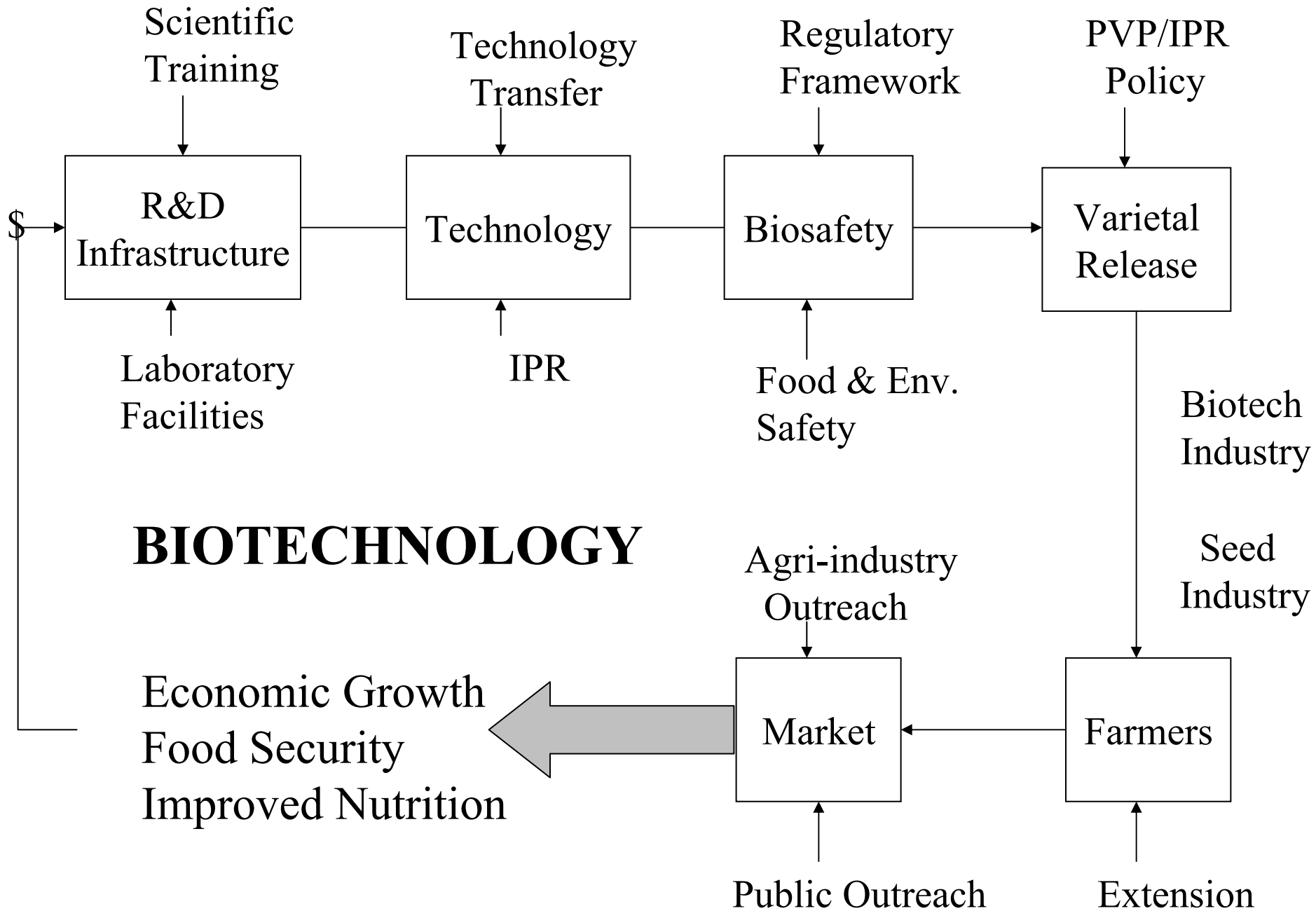
DNA is a strand of genes, much like a strand of pearls. Traditional plant breeding combines many genes at once.



PLANT BIOTECHNOLOGY

Using plant biotechnology, you can add a single gene to the strand.





Global Production of Transgenic Crops

(source ISAAA Brief 24 -2001)

During the six-year period 1996 to 2001, global area of transgenic crops increased more than 30-fold, from 1.7 million has. in 1996 to 52.6 million has. in 2001

Distribution of global acreage

- United States - 68%
- Argentina - 22%
- Canada - 6%
- China - 3%
- Australia, South Africa, Indonesia, Mexico, Bulgaria, Spain, Romania, Uruguay, Germany - 1%

Agricultural Biotechnology Support Project (ABSP)

FY 1991 - FY 2002 (www.iaa.msu.edu/absp/)

Project Goal

To improve the capacity and policy environment for the use, management, and commercialization of agricultural biotechnology in developing countries and transition economies.

Project activities and achievements

- **Applied Research:** Geminivirus resistance in cucurbits for Egypt
 - » Virus resistant sweet potato for Africa
 - » Resistance to potato tuber moth (Egypt, South Africa)
 - » Asian corn borer resistance in tropical maize
 - » Micropropagation in Costa Rica
- **Biosafety:** Assistance at the national and institutional level to develop and implement biosafety regulations (Morocco, Egypt, Kenya, Indonesia)
- **Intellectual Property Rights:** Training, capacity building at institutional and national level (Costa Rica, Indonesia, Egypt etc.)
- **Technology Transfer:** Assistance at the institutional level to manage IPR issues

ABSP Partners

USA partners

Public sector

- Michigan State University
- University of Wyoming
- Cornell University
- Texas A & M University
- Scripps Research Institute
- University of Arizona
- University of Texas at Dallas

Private sector

- Asgrow
- Monsanto Co.
- Garst Seed Company (ICI Seeds, Inc.)
- Pioneer Hi-Bred
- DNA Plant Technology (DNAP)

Developing country partners

- Central Research Institute for Food Crops (CRIFC), Indonesia
- Agricultural Genetic Engineering and Research Institute (AGERI), Egypt
- Kenya Agriculture Research Institute (KARI)
- Agribiotecnologia de Costa Rica
- Fitotek Unggul, Indonesia
- DPVCTRF, Morocco
- ARC, South Africa
- ASARECA, East and Central Africa

External Evaluation of ABS P

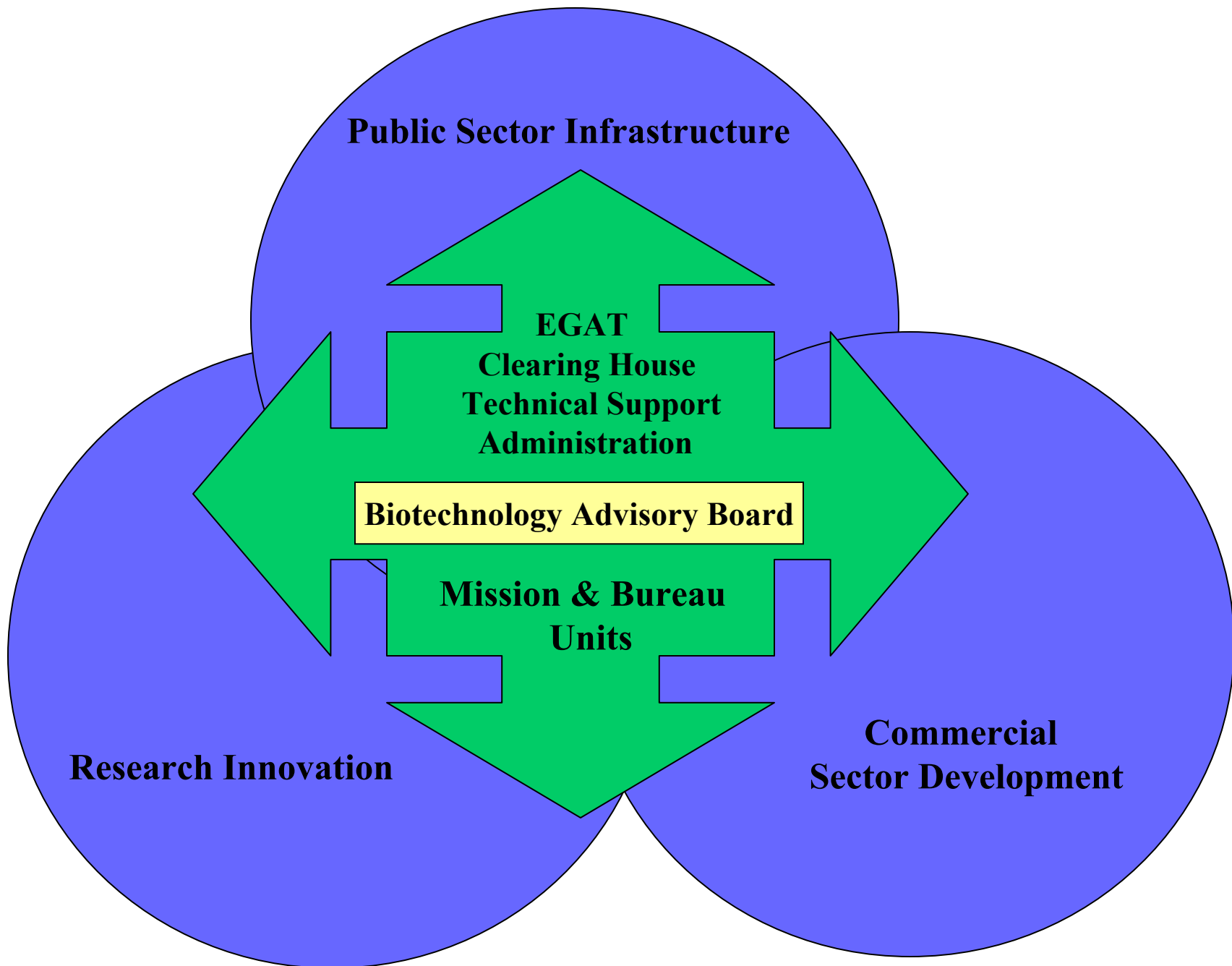
Findings

- Integration of technology development with policy development very effective
- Forging of public-private, public-public, private-private partnerships successful
- Technology transfer activities created the environment for transfer of materials

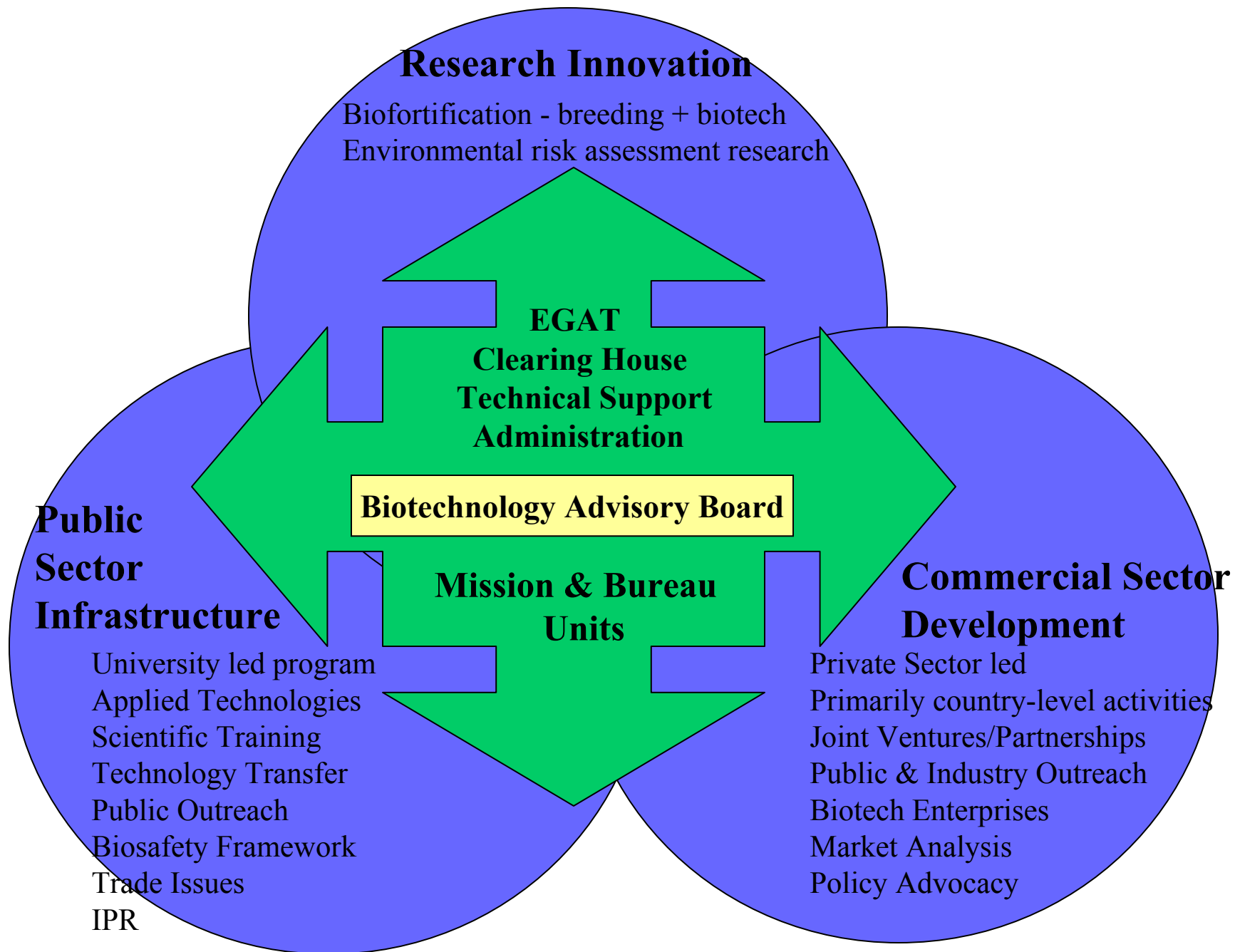
Key Recommendations for a follow-on project

- Follow ABS P model of integrating technology development with enabling policy environment
- Select R&D projects based on country specific priority setting
- Prioritize biosafety studies (food safety and environmental impact) concurrently with technology development
- Commercial Sector Development - effective delivery of biotech products

USAID Biotechnology Framework



USAID Biotechnology Framework



Collaborative Agricultural Biotechnology (CABIO) Initiative

- USAID platform to address various components of ag biotechnology development and dissemination in developing countries
- Program/s in this platform will support mission interest
- Mechanism/s will be in place in FY 2002